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L3: Entry 6 of 94

File: USPT

Sep 30, 2003

DOCUMENT-IDENTIFIER: US 6628891 B1

TITLE: Signal filtering mechanism for a multi-purpose digital television receiver

Detailed Description Text (72):

The key feature of the private recording system described in FIGS. 43 and 44 is to scramble the signals in accordance with a private cipher key before they are recorded and then to descramble the recorded signals in accordance with the same private cipher key when they are played back. This means that the recording on the signal storage medium, that is the resulting recording on the signal storage medium is only usable by a person or machine having knowledge of the private cipher key. These functions are provided by the scrambler mechanism 444 of FIG. 43 and the descrambler mechanism 451 of FIG. 44. By way of contrast, the conditional access descrambling provided by the descrambler 443 of FIG. 43 and the copy protection scrambling provided by scrambler 452 of FIG. 44 are for purposes of making the recording and playback operations compatible with the overall operation of the conditional access system. The conditional access descrambler 443 is needed because the incoming signals from the in-band receiver 30 are scrambled signals. The recording subsystem 442 in effect functions as a scrambling format converter for converting from one scrambling format to a different scrambling format. This is done by descrambling the first signal to produce a clear copy version thereof and then scrambling the clear copy signal in accordance with the second scrambling format. This is necessary to provide the private scrambling format for the recorded signals.

CLAIMS:

17. A digital signal filtering mechanism in accordance with claim 1, further comprising playback system for reproducing signals recorded on a signal storage medium in a scrambled format using a predetermined cipher key, the playback system comprising: a playback mechanism for playing back scrambled signals recorded on a signal storage medium; a descrambler mechanism responsive to the played back signals for descrambling such signals in accordance with the predetermined cipher key; and circuitry for supplying the descrambled signals to an end-user system.

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L4: Entry 4 of 23

File: USPT

Apr 24, 2001

DOCUMENT-IDENTIFIER: US 6222924 B1

TITLE: Scrambling of digital media objects in connection with transmission and storage

Abstract Text (1):

To prevent unauthorized reception, storage, copying and reproduction of digital media objects it is defined in addition to a scrambled broadcast format a scrambled storage format which is different from the broadcast format. A user's terminal equipment cannot receive, store or reproduce protected objects without a key which is advantageously a bit sequence stored on a portable memory medium and which can be different according to the type of use it gives entitlement to. To prevent the storing and later reproduction as such of data in the broadcast format, a time stamp is included in the broadcast format representing the time of broadcasting. A playback device cannot reproduce a broadcast-format object if the reproduction time differs from the time stamp included in the broadcast format. The reproduction time is advantageously read from a real time clock of a portable memory medium.

Brief Summary Text (15):

The method according to the invention for protecting digital media objects against unauthorized use, which objects can be electrically distributed to several receivers and stored on a memory medium for later use, wherein a scrambled broadcast format is specified for said media objects, is characterized in that a scrambled storage format is also specified for said media objects for the storing on said memory medium, which scrambled storage format is different from said scrambled broadcast format.

Brief Summary Text (18):

The scrambling method according to the invention further comprises a timing arrangement wherein the objects transmitted are time-stamped, ie. provided with data representing the transmission moment. Then, even if an object were stored in the broadcast format, its unauthorized reproduction at a later time can be prevented if the reproducing device first has to compare the stored time data to the real time. If the times are unidentical, reproduction is prohibited. The timing arrangement is based on an electrical memory medium which is advantageously a smart card or such. Below, this portable memory medium will be called a smart card. In the arrangement according to a preferred embodiment of the invention the smart card includes a real time clock, which refers to any circuit in general which, when read at an arbitrary moment of time, unequivocally yields the data representing the time of the reading. According to the invention, each object is arranged both for transmission and storage into data parts that can be called frames, packets, cells or data groups and that are formatted according to existing standards and recommendations describing data transmission and/or storage. At least part of the frames and data groups are provided with a time stamp which in the case of broadcasting refers to the time of transmission and in the case of storage to the time of storing.

Detailed Description Text (132):

The invention requires no changes in known object broadcasting media since the scrambling of digital objects in broadcasting is known in the prior art. A terminal equipment according to the invention has to include means for receiving and

descrambling a transmission scrambled using a known method and for decrypting the scrambling keys by means of an authorization stored on a memory medium. In addition, a storing terminal equipment has to include means for producing the storage format described above in the storing phase, and for reading it in the playback phase. These means are advantageously realized as software processes executed by a microprocessor controlling the operation of the terminal equipment or another programmable device operating under its control, such processes being routinely drawn up by those skilled in the art.

## CLAIMS:

1. A method for handling a digital media object arranged to be protected against unauthorized use, wherein the digital media object is electrically distributable to several receivers and storable on a memory medium for later use and a scrambled broadcast format is defined for electrically distributing the digital media object, the scrambled broadcast format necessitating both knowledge about the appropriate descrambling algorithm and the possession of at least one descrambling key to enable it to be descrambled, the method comprising the steps of:

converting the digital media object into a scrambled storage format, which is different from said scrambled broadcast format and necessitates both knowledge about the appropriate descrambling algorithm and the possession of at least one descrambling key to enable it to be descrambled;

storing said digital media object in said scrambled storage format on a memory medium; and

determining, when the digital media object is reproduced to a user, if the difference between a timestamp included in the scrambled broadcast format and a timestamp of reproduction exceeds a predetermined maximum and preventing the digital media object from being reproduced if the difference exceeds the predetermined maximum.

12. A method for handling a digital media object arranged to be protected against unauthorized use, wherein the digital media object is electrically distributable to several receivers and storable on a memory medium for later use and a scrambled broadcast format is defined for electrically distributing the digital media object, the method comprising the steps of:

converting the digital media object into a scrambled storage format, which is different from said scrambled broadcast format, wherein the digital media object in the scrambled broadcast format includes a time stamp that refers to the time of broadcasting, and wherein the digital media object in said scrambled storage format includes a time stamp that refers to the time of storing; and

storing said digital media object in said scrambled storage format on a memory medium.

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L7: Entry 5 of 15

File: USPT

Feb 4, 1997

DOCUMENT-IDENTIFIER: US 5600573 A

TITLE: Operations center with video storage for a television program packaging and delivery system

Detailed Description Text (84):

FIG. 8 shows an alternative embodiment of the receiver 300, which enables the operations center 202 to handle analog scrambling and digital encryption of signals. Specifically, the receiver 300' is capable of performing any conversions necessary so that the storage device 308 may store any types of program signals which may be needed by remote sites 208. More specifically, the embodiment shown handles analog scrambled programs in MPEG digital format 800, MPEG encrypted programs 804, MPEG stored programs that are not scrambled or encrypted 808, ATM stored programs that are analog scrambled 812, and ATM programs in digital encrypted format 816.

Detailed Description Text (89):

Following processing by the MPEG encoder 832, the signal is sent by the receiver 300' to the holder 304. The holder 304 may preprocess the program signal and pass it to the storage device 308 for storage in the appropriate location for MPEG analog scrambled signals 800. It is preferred that the scrambler encryption determiner 628 of the CAP 316 inform the system controller 312 of the desired scrambling method, GI 824 or SA 828. Thus, when the signal is finally spooled out by the storage device 308 to the output equipment 320, the spooled signal is in the exact analog scrambled format that is needed by the remote site 208 requesting the program. Alternatively, that MPEG analog scrambled signal 800 may be converted to an ATM format by the receiver 300' prior to being stored, using the MPEG to ATM converter 836. This ATM signal would then be stored as an ATM analog scrambled signal 812 at the storage device 308, and then spooled in ATM signal format.

Detailed Description Text (91):

If analog scrambling is not necessary or needed by the remote site 208, the programs may be stored in MPEG encrypted format 804, MPEG video format that is not scrambled or encrypted 808, or ATM digitally encrypted format 816. To accomplish this result, the receiver 300 may pass ATM signals directly to the holder 304 for storage in the storage device 308 (if the ATM signals are already digitally encrypted). Alternatively, the ATM signals may be converted to MPEG (using ATM to MPEG converter 840) then digitally encrypted while in MPEG format (using MPEG encryption 818) and then converted from MPEG back to ATM format (using the MPEG to ATM converter 836) and finally stored in the storage device 308.

Detailed Description Text (93):

The result is that this embodiment of receiver 300' may accept a signal containing video in an ATM signal format, MPEG digital video format or NTSC analog video format; and perform any necessary scrambling, encryption and conversion so that the signal may be stored in storage device 308 in numerous formats. Those skilled in the art will recognize that numerous hardware and software variations of the design are possible to accomplish the multiple input, multiple outputs of this receiver 300' which handles scrambling, encryption and converting for later storage of the signal. Thus, the program signals may be spooled directly to the output equipment 320 in proper format for transmission.

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US006304482B1

(12) **United States Patent**  
Lin et al.

(10) Patent No.: **US 6,304,482 B1**  
(45) Date of Patent: **Oct. 16, 2001**

(54) **APPARATUS OF REDUCING POWER CONSUMPTION OF SINGLE-ENDED SRAM**

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(73) Assignee: **Silicon Integrated Systems Corp.**, Hsin-chu (TW)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/716,247**

(22) Filed: **Nov. 21, 2000**

(51) Int. Cl.<sup>7</sup> ..... **G11C 11/40**

(52) U.S. Cl. .... **365/154; 365/227**

(58) Field of Search ..... **365/154, 156, 365/226, 227**

(56) **References Cited**

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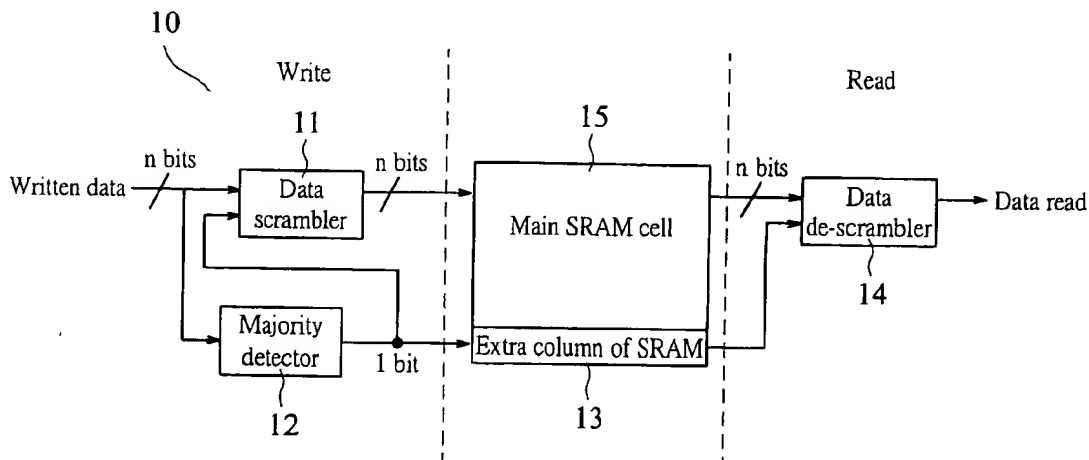
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(57) **ABSTRACT**

An apparatus of reducing power consumption of a single-ended Static Random Access Memory (hereinafter referred as SRAM) is provided. The apparatus consists of at least an extra column of status memory cell and a majority detector by which a bit status of a written data is detected and by which the value of the bit status is written into the extra column of status memory cell. The apparatus further includes a data scrambler by which the written data is converted into a storage data with a minority of 0 bits based on the value of bit status and by which the storage data is written into the main single-ended SRAM cell. The apparatus further includes a data de-scrambler by which the storage data in the main single-ended SRAM cell is converted into its original format based on the value of bit status stored in the extra column of memory cell and by which the data in its original format is output. Since the data stored in the main single-ended SRAM cell has a majority of 1 bits, the apparatus can reduce the power consumption of the single-ended SRAM.

**10 Claims, 5 Drawing Sheets**



## Refine Search

### Search Results -

Terms	Documents
L8 same (storage or memory)	12

Database:

US Pre-Grant Publication Full-Text Database

US Patents Full-Text Database

US OCR Full-Text Database

EPO Abstracts Database

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IBM Technical Disclosure Bulletins

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### Search History

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<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>			
<u>L9</u>	L8 same (storage or memory)	12	<u>L9</u>
<u>L8</u>	L2 same plurality	96	<u>L8</u>
<u>L7</u>	L6 same storage	15	<u>L7</u>
<u>L6</u>	scramb\$ near5 format	383	<u>L6</u>
<u>L5</u>	L3 same ram	19	<u>L5</u>
<u>L4</u>	L3 same memory	23	<u>L4</u>
<u>L3</u>	L2 same storage	94	<u>L3</u>
<u>L2</u>	scramb\$ same format	1306	<u>L2</u>
<u>L1</u>	srmb\$ same format	0	<u>L1</u>

END OF SEARCH HISTORY